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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/707,592

12/23/2003

Robert Brule

45283.102

1591

22828 7590 01/21/2010  
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CANADA

EXAMINER

BALDWIN, GORDON

ART UNIT

PAPER NUMBER

1794

MAIL DATE

DELIVERY MODE

01/21/2010

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/707,592	<b>Applicant(s)</b> BRULE ET AL.	
	<b>Examiner</b> GORDON R. BALDWIN	<b>Art Unit</b> 1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 08 October 2009.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 3-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                    | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)         | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1 and 11 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The applicant stated in the arguments filed 10/8/2009 that support for the current claim limitations is in paragraphs 28 and 29 (and figures 3A-3D) of the specification. This assertion is not considered to be persuasive because the fibers, if they were coated, would still act as physical restraint to the ceramic powder. Neither paragraph 28 or 29 specifically discloses that the fibers and the powder are connected directly to each other without any layer of any material between them. They merely act as a physical barrier, but no definitive statement of their lacking a coating can be discerned. Regarding the figures disclosed by the applicant, since they are black and white and it not possible to discern whether the fibers and particles have layers or not.

Additionally, the applicant only states that the seal is "substantially free" of binder. By this statement, there is still binder in the seal and that binder would be between the ceramic particles and fibers.

***Claim Rejections - 35 USC § 102/103***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claims 1, 3-11 rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Luthra (U.S. Pat. No. 4,933,309).**

**Consider claims 1, 3, 7-10 and 11,** Lurtha discloses a ceramic composite which is taught to contain ceramic fibers of alumina as well as a ceramic powder of alumina with a particle size of 1-6 microns. (Col. 2 lines 20-28, 58-69 and Col. 3 lines 1-19)

The disclosure of a particle size of 1-6 microns is considered to anticipate the “about 5 micrometer particle size” because prior art which teaches a range within, overlapping, or touching the claimed range anticipates if the prior art range discloses the claimed range with sufficient specificity. See MPEP 2131.03 and Ex parte Lee, 31 USPQ2d 1105 (Bd. Pat. App. & Inter. 1993).

Lurtha is considered to disclose a composite structure in a fired state. (Col. 3 lines 10-20 and 40-55) Additionally, Lurtha discloses the use of tape-casting to produce the ceramic piece with the binder and sintering aid evaporated off, with a fired porosity of 60% or less (see col. 3, lines 53-55, for instance).

The claiming of the method of “tape-casting” is considered to be a product-by-process limitation and even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process., (In re Thorpe, 227 USPQ 964,966). Once the Examiner provides a rationale tending to show that the claimed product appears to be the same or similar to that of the prior art, although produced by a different process, the burden shifts to applicant to come forward with evidence establishing an unobvious different between the claimed product and the prior art product (*In re Marosi*, 710 F.2d 798, 802, 218 USPQ 289, 292 (Fed. Cir. 1983), MPEP 2113).

Regarding the use of Lurtha’s article as compared to the applicant’s stated use in the preamble of claim 1, the recitation “seal for use in a high temperature fuel cell” has not been given patentable weight because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process

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steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).

Lurtha discloses that the article described is for use in high temperature environments, therefore such an article is also considered to be in the realm of use for a seal or any other article used in a high temperature environment.

Regarding the ability of the Lurtha's article to have the same characteristics as the claimed article (ceramic fibers remaining flexible at operating temperatures and ceramic fibers resisting sintering at operational temperature), these characteristics are considered to be met by Lurtha. They are met because Lurtha teaches the use of the same materials (alumina fiber and powders) and the same process to manufacture (tape-casting) with the same size particles with porosity in the range of the applicant. By this disclosure, the features of flexible ceramic fibers at operating temperatures and fibers resisting sintering at operating temperatures is considered to be met by the disclosure in the Lurtha reference.

Regarding the new claim limitations of claim 1 and claim 11, the fibers and the powder having direct ceramic-to-ceramic contact, Lurtha is considered to anticipate this limitation. Lurtha specifically discloses that, "the coating of noble metal (on the fibrous material) generally optimizes interfacial shear stress...with a toughness significantly higher than that of a composite wherein the fibrous material is **uncoated**." This statement in Lurtha acknowledges that it was known in the art at the time Lurtha was printed to coat previously uncoated ceramic fibers and ceramic particles to optimize for

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the interfacial shear forces between the fibrous material and the ceramic matrix.

Therefore, Lurtha is considered to disclose that it was known to have the ceramic fibers and ceramic particles without noble metal coatings, which would therefore provide direct ceramic-to-ceramic contact. (Col. 5 lines 45-60) While this may not be the most advantageous configuration, since Lurtha specifically states that the ceramic particle to fiber arrangement is optimized with a coating of a noble metal to increase certain qualities, Lurtha's disclosure does indicate that this uncoated arrangement of ceramic particle and fibers was known in the art and is functional in such an arrangement.

However, if the disclosure of Lurtha is not considered to anticipate the limitation where the ceramic fibers and the ceramic particles are not coated and thereby have direct contact, between the particles and fibers, then the portion of Lurtha specifically disclosing that, "the coating of noble metal (on the fibrous material) generally optimizes interfacial shear stress...with a toughness significantly higher than that of a composite wherein the fibrous material is uncoated.", is considered to render the claimed limitation obvious to a person of ordinary skill in the art at the time of the invention. A person of ordinary skill in the art would have read this section in Lurtha and would have known that it is possible for the ceramic particles and fibers to lack a noble metal coating and still work effectively as a seal. Because Lurtha specifically indicates that the adding of the noble metal coating is only to optimize the structure for interfacial shear stress. It can be gleaned from this information that, if interfacial shear stress is not a significant problem, then a noble coating is not warranted. Therefore, it would be obvious to omit

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the noble metal coating for the ceramic fibers in a fiber particle matrix to save on resources (noble metals) and to save the purchase of such materials.

**Consider claims 4-6**, while Lurtha does not specifically mention a pre-fired porosity, these claims are considered to be met by Lurtha. They are met because Lurtha teaches the use of the same materials (alumina fiber and powders) and the same process to manufacture (tape-casting) with the same size particles with porosity in the range of the applicant. Additionally, since claim 1 relates to a seal in a “fired state”, the limitations of claims 4 and 5 are merely to an intermediate phase of the final “fired” product. Therefore these limitations are not of the final product (product of claim 1) and are not given patentable weight over the prior art.

### ***Response to Arguments***

Applicant's arguments filed 10/8/2009 have been fully considered but they are not persuasive. The applicant's arguments are not persuasive because Lurtha is considered to disclose that it is known to have uncoated ceramic fibers and particles in the same matrix without a noble metal coating.

Regarding the new claim limitations of claim 1 and claim 11, the fibers and the powder having direct ceramic-to-ceramic contact, Lurtha is considered to anticipate this limitation. Lurtha specifically discloses that, “the coating of noble metal (on the fibrous material) generally optimizes interfacial shear stress...with a toughness significantly higher than that of a composite wherein the fibrous material is **uncoated**.” This statement in Lurtha acknowledges that it was known in the art at the time Lurtha was printed to coat previously uncoated ceramic fibers and ceramic particles to optimize for

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the interfacial shear forces between the fibrous material and the ceramic matrix. (Col. 5 lines 45-60) Therefore, Lurtha is considered to disclose that it was known, prior to the optimization with noble metals) to have the ceramic fibers and ceramic particles without noble metal coatings, which would therefore provide direct ceramic-to-ceramic contact. (Col. 5 lines 45-60) While this may not be the most advantageous configuration, since Lurtha specifically states that the ceramic particle to fiber arrangement is optimized with a coating of a noble metal to increase certain qualities, Lurtha's disclosure does indicate that this uncoated arrangement of ceramic particle and fibers was known in the art and is functional in such an arrangement.

By this disclosure, Lurtha is still considered to read upon the claimed invention.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

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TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to GORDON R. BALDWIN whose telephone number is (571)272-5166. The examiner can normally be reached on M-F 7:45-5:15.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer McNeil can be reached on 571-272-1540. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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